CLAIMS

1.- Anti-roll and anti-pitch device for a vehicle, specifically to be applied to vehicles with wheeling sets, specially four, each wheeling set made up by one or more wheels, such device that cooperating with the suspension of the vehicle or substituting it, allows that the wheeling sets keep contact with the ground and a uniform load distribution even with an irregular terrain and comprise receiving element (1) associated with one wheeling set transmits its vertical forces to a direct transforming element (2) from these vertical forces into horizontal forces, which in turn are transmitted to an inverse transforming element (4) from the horizontal forces into vertical forces that operate on an actuating element (1) associated to a second wheeling set diagonally opposite in respect to the first where it creates a vertical force analogous to he former in the first wheeling set, characterized by the connection of such transmission means to the vehicle body through a resilient element (27) that together with the trasmission means resiliency provides the suspension main resilient component.

2.- Device, as in claim 1 wherein the resilient elements connected to the transmission means (26) are connected to the vehicle body through a balance beam (34) in such a way that the ends of this beam equal arms are connected to each resilient element (27), and the central axis (35) is connected to the vehicle body.

3.- Device, as in claim 1, wherein the direct transforming elements (23) are placed on the wheeling sets of one side of the vehicle, and the inverse transforming elements are placed in the wheeling sets of the other side of the vehicle, having a resilient element (27) that connects the two transmission means (26) in such a way that together with the transforming element and transmission means resiliency, it provides the suspension main resiliency component.

4.- Device, as claimed in claim 1, wherein the vertical forces detected in the wheeling sets work on an electronic interaction means (22) where the transmission means are electrical conduits that operate the servo actuators (21) individually related with the whe ling s ts.

5.- Device, as claimed in claim 1, wherein the transmission means of forces are hydraulic circuits connected to single effect hydraulic rams on each dyagonally oposed wheel, with each conduit connected to a pneumatic cavity as to provide some resilient component individual to the wheel, and a central device that allow parallel forces of the hydraulic fluid, which forces are transmitted to a central resilient element conected to the vehicle body that can be a third pneumatic cavity or a resillent component, that together with the trasmission means resiliency provides the suspension main resilient component.

6.- Device, as claimed in claim 5 wherein the two central devices are connected through a conduit or built together so as to connect the two resilient elements that operate on the two sets of diagonal transmission elements in such a way that the two central resillent elements act together, and with the resilient elements on each single effect ram connected to the wheels of the vehicle.

7.- Device, as in claim 5, where the central device is made up by a longitudinal set of two hollow concentric and coupled cylinders (52 and 53) of different diameters, closed at the ends (54) of that set, finding inside one free-moving double piston (55) with the larger diameter piston (55A) inside the larger central cylinder, and the smaller diameter piston (55B) in the corresponding smaller cylinder (53) therefore determining three cavities, one central cavity, and two side cavities being the smaller and central cavities connected to the hydraulic conduits (61) corresponding to the single effect hydraulic rams (42) of two diagonally opposed wheeling sets, while the side cavity on the larger cylinder incorporates an operating device made up of resilient elements (46) and/or a fluid (62) susceptible of being communicated with an expansion chamber (56) that opposes to the vertical movements of the diagonally oposed pistons get closer.

8.- Device, as in claim 6, where the two central devices are built together on a hydraulic central device (43) made up by a longitudinal set of three hollow concentric and coupled cylinders (52 and 53) closed at the ends (54) of that set, where the central cylinder (52) is of larger diameter and the side cylinders (53) are both equal and of a smaller diameter, finding inside two free-moving double pistons (55) with one larger diameter piston (55A) inside

the larger central cylinder, and one smaller diameter piston (55B) in the corresponding side cylinder (53) therefore determining five cavities (56, 57, 58, 59 and 60), one central cavity, and two double cavities at each side of the set separated by the smaller diameter pistons, being these double cavities at the ends connected to the hydraulic conduits (61) corresponding to the single effect hydraulic rams (42) of two diagonally opposed wheeling sets, while the central cavity incorporates an operating device made up of resilient elements (46) and/or a fluid (62) susceptible of being communicated with an expansion chamber (56) that opposes to such pistons get closer.

9.- Device, as in claim 7, wherein each double piston (55) in the central hydraulic device (43) is substituted by two o more conventional pistons, linked with each other but working in independent single effect hydraulic rams in such a way that two or more cavities of the new rams come to substitute cavities (57-59 and 58-60) that were separated by each smaller diameter piston (55B), connecting then to the hydraulic conduits (61) according to the diagonal layout, and joining the two groups of linked pistons through a resilient element (66) working as the central cavity means (56).

SUB A1> 10.- Device, as in claims 5 and 6, wherein flow regulation and two-way damping means (67) are inserted in the conduits that connect the central device with each of the hydraulic rams at the wheels, or in the conduits between hydraulic rams of conjugated wheels.

11.- Device, as in claim 8, wherein the central cavity (56), the double side cavities (67-59 and 58-60), the conduits (61) between these cavities and the hydraulic rams (42) at the wheels and such hydraulic rams are connected to one or more pneumatic expansion chambers (68) through electro valves.

12.- Device, as in claim 8, wherein each conduit (61) between the hydraulic central device double side cavities and the single effect hydraulic rams (42) at the wheels can be connected to each other through devices (70, 71 sand 72) that allow a limited volume flow depending on the pressure differential between such conduits

13.- Device, as in claim 5, wherein the connection between conduits is preferably applied to conduits to wheels of the same side of the vehicle

SUB A2 > 14.- Device, as in claim 6 and 8, wherein some means are provided to introduce pressurized gaseous or hydraulic fluid in the central cavity, or drain it, with the purpose of varying the average distance between the wheels and the vehicle body.

15.- Device, as in claim 8, wherein a mechanical device provides the thrust between the two larger diameter pistons found in the central cavity of the central hydraulic device.

16.- Device, as in claim 8, wherein one or more devices provided with a variable volume cavity (61) are shunt connected to each hydraulic conduit such as that the circuit pressure increment compress a resilient or pneumatic element that allows fluid enter into such cavity.

17.- Device, as claimed in 8, wherein one or more devices (67) or passive or active regulating valves are inserted in each hydraulic conduit.

18.- Device, as claimed in 1, wherein some wheeling sets are substituted by a device that allows travelling movements such as caterpillars or tractor vehicles.